

**I. REJECTION OF CLAIMS 1, 7, 8, 13, 14, 16, 17, 20, 22, 26 AND 27 UNDER 35 U.S.C. § 103(A)**

Claims 1, 7, 8, 13, 14, 16, 17, 20, 22, 26 and 27 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over United States Published Application U.S. 2002/0130326 (“Tamura et al.”) in view of United States Patent 6,069,676 (“Yuyama”). Applicants respectfully submit that claims 1, 7, 8, 13, 14, 16, 17, 20, 22, 26 and 27 are not rendered obvious to the attempted combination of references for the following reasons.

Claim 1 relates to an array. Claim 1 recites the features of a plurality of light emitting devices disposed on a transparent substrate, the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, each of the side surfaces being substantially perpendicular to the upper surface, and at least one photodetector arranged on the lower surface of the transparent substrate for detecting light emitted from the light emitting devices.

Claim 14 relates to a method for forming an array, comprising forming a plurality of light emitting devices disposed on a transparent substrate, said transparent substrate having an upper surface contacting the light emitting device, a lower surface distal from the light emitting device and at least one side surface substantially perpendicular to said upper surface of the transparent substrate; and forming a photodetector at the lower surface of the transparent substrate for detecting light emitted through the transparent substrate.

Tamura et al. relate to a lighting device. Title. A plurality of light emitting diodes (LED’s) are arranged in at least two-dimensionally dispersed manner that covers the plurality of LED’s in an integrated form. Tamura et al. also provide a photo-detecting unit that detects an intensity of light emitted from the plurality of LEDs using a photodetector, the photodetector being arranged inside, on a surface, or in the vicinity of the transparent resin layer. Tamura et al., however, provide the photodetector 9, as provided in Figure 2B, roughly parallel in configuration with the LED 8. The LED 8 and the photodetector 9 are located at approximately the same elevation on the transparent layer 10. Referring to Figure 3B, the photodetector 16 is placed behind spectral filters 18 adjacent to the transparent layer 10. In Tamura et al. Figure 4B, the photodetector 25 is positioned on a same side as the individual light emitting diodes 21, 22, 23 and 24 of the transparent layer 10. Thus, all illustrated and

described embodiments provided in the Tamura et al. reference require placement of the photodetector on a same side as the light emitting diodes of the configurations. Tamura et al., in fact, requires that the transparent resin layer satisfy a given thickness, as this relationship between the position of the light emitting diodes and the photodetector causes the amount of light incident upon the photodetector to be increased as specified in paragraph 0017. The Tamura et al. reference, therefore, does not disclose or suggest the feature of a plurality of light emitting devices disposed on a transparent substrate, the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, each of the side surfaces being substantially perpendicular to the upper surface.

The attempted addition of the Yuyama reference does not cure the critical defects of the Tamura et al. reference. Yuyama does not disclose the feature of a plurality of light emitting devices disposed on a transparent substrate, the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, each of the side surfaces being substantially perpendicular to the upper surface. Yuyama, therefore, is similarly deficient as the Tamara et al. reference.

Yuyama provides a sequential color display device. Title. Yuyama provides in Figure 11, three different light emitting diodes 2a, 2b and 2c at a bottom of a box structure. An air gap is then presented over top of the light emitting diodes 2a, 2b and 2c. A light diffusion plate 4 with a photosensor 10 is attached to a top side of the light diffusion plate. The light emitting diodes are placed at a substantial distance from the light diffusing plate 4. Yuyama, therefore, does not disclose a configuration of a light emitting device, a transparent layer, and a photoresistor, or a method using such a configuration as presented in claims 1 and 14 and is therefore similarly deficient to the previously cited Tamara et al. reference.

Claims 7, 8 and 13 depend from claim 1 and therefore include all of the features provided in independent claim 1. Claims 7, 8 and 13 are therefore patentable for at least the reasons presented above in relation to claim 1.

Claims 16, 17, 20 depend from claim 14 and therefore include all of the features provided in independent claim 14. Claims 16, 17, 20 are therefore patentable for at least the reasons presented above in relation to claim 14.

Claims 22, 26 and 27 were cancelled in the previous response to Office Action and applicants herewith note that the rejections in this Office Action are typographical errors and are moot.

## **II. REJECTION OF CLAIM 18 UNDER 35 U.S.C. § 103(A)**

Claim 18 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tamura et al. in view of Yuyama and further in view of United States Patent Number 7,026,597 (“Cok”). Applicants respectfully submit that claim 18 is not rendered obvious to the attempted combination of references for the following reasons.

Claim 18 ultimately depends from claim 14 and therefore includes all of the features of claim 14.

The deficiencies of the Tamura et al. and Yuyama references are discussed above and are applicable to this rejection including the step of forming a plurality of light emitting devices disposed on a transparent substrate, said transparent substrate having an upper surface contacting the light emitting device, a lower surface distal from the light emitting device and at least one side surface substantially perpendicular to said upper surface of the transparent substrate.

The attempted addition of the Cok reference does not cure the critical deficiencies of the Tamura et al. and Yuyama references. Cok relates to a OLED display with integrated elongated photosensor. The Office Action merely uses the Cok reference to allegedly teach that photodetectors may be formed on an edge of a display.

Applicants respectfully submit that Cok does not disclose or suggest any configuration or method, forming a plurality of light emitting devices disposed on a transparent substrate, said transparent substrate having an upper surface contacting the light emitting device, a lower surface distal from the light emitting device and at least one side surface substantially perpendicular to said upper surface of the transparent substrate. Cok

does not disclose or suggest any such surface proximal positioning and is similarly deficient to the Tamura et al. and Yuyama references.

As the attempted combination of references do not disclose or suggest the features of claim 18, applicants respectfully request withdrawal of the rejection to claim 18.

### **III. REJECTION OF CLAIMS 12 AND 21 UNDER 35 U.S.C. § 103(A)**

Claims 12 and 21 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tamura et al. in view of Yuyama and further in view of United States Patent Number 6,424,326 (“Yamazaki et al.”). Applicants respectfully submit that claims 12 and 21 are not rendered obvious to the attempted combination of references for the following reasons.

Claim 21 depends from claim 20 and ultimately from claim 14, and further comprises the step of forming the feedback circuit with a compensation factor generator for generating a compensation factor for each of the plurality of light emitting devices and a memory array for storing the compensation factor for each of the plurality of light emitting devices

Claim 12 ultimately depends from claim 1 and therefore includes all of the features of claim 1.

The deficiencies of the Tamura et al. and Yuyama et al. references are discussed above, and are applicable to this rejection. The addition of the Yamazaki et al. reference does not cure the critical deficiencies of the Tamura et al. and Yuyama et al. references.

Yamazaki et al. allegedly relate to a semiconductor display device having a display portion and a sensor portion. Title. The Yamazaki et al. reference is used by the Office Action to recite a display detecting brightness and a memory array for storing a compensation factor for each of the plurality of light emitting devices. The Yamazaki et al. reference, however, does not disclose or suggest the feature of a plurality of light emitting devices disposed on a transparent substrate, the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, each of the side surfaces being substantially perpendicular to the upper surface. All three references are deficient in this regard. Applicants respectfully request withdrawal of the rejection to claims 21 and 12.

**IV. REJECTION OF CLAIMS 29 TO 31, 33 AND 34 UNDER 35 U.S.C. § 103(A)**

Claims 29, 31, 33 and 34 were rejected as unpatentable over Henmi et al. in view of Yuyama et al. Applicants respectfully submit that claims 29, 31, 33 and 34 are patentable for the following reasons.

Claim 29 relates to an array, comprising a plurality of light emitting devices formed on a surface of a transparent substrate the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, and at least one photodetector arranged on an opposite surface of the transparent substrate for detecting light emitted from the light emitting devices.

Claim 33 relates to an array comprising a plurality of light emitting devices disposed over a substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device are a plurality of side surfaces, and a photo detector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface and wherein at least one light emitting device comprises an OLED.

The defects of the Henmi et al. and Yuyama et al. references above are applicable to this rejection. Both the Henmi et al. and Yuyama et al. references do not disclose or suggest a plurality of light emitting devices formed on a surface of a transparent substrate the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, and at least one photodetector arranged on an opposite surface of the transparent substrate for detecting light emitted from the light emitting devices. As the attempted combination of references fails to disclose or suggest this configuration, applicants respectfully request withdrawal of the rejection to claims 29 and 33.

Claims 30 and 31 depend from claim 29 and therefore include all of the features of claim 29 and claim 34 depends from claim 33 and therefore includes all of the features of claim 33. Applicants respectfully submit that claims 30, 31 and 34 are patentable for at least the reasons provided above in relation to claims 29 and 33 respectively.

**V. REJECTION OF CLAIM 32 UNDER 35 U.S.C. § 103(A)**

Claim 32 was rejected as unpatentable over Henmi et al. in view of Yuyama et al. and in further view of Yamazaki et al. Applicants respectfully submit that claim 32 is patentable for the following reasons.

Claim 32 ultimately depends from claim 29 and therefore includes all of the features of claim 29.

As provided above, the Henmi et al., the Yuyama et al. and Yamazaki et al. references all fail to disclose or suggest a plurality of light emitting devices formed on a surface of a transparent substrate the transparent substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, and at least one photodetector arranged on an opposite surface of the transparent substrate for detecting light emitted from the light emitting devices. As the attempted combination of references fails to disclose or suggest this configuration, applicants respectfully request withdrawal of the rejection to claim 32.

**VI. REJECTION OF CLAIM 35 UNDER 35 U.S.C. § 103(A)**

Claim 35 was rejected as unpatentable over Henmi et al. in view of Yuyama et al. and Yamazaki et al. Applicants respectfully submit that claim 35 is patentable for the following reasons.

Claim 35 depends from claim 33 and therefore includes the features of claim 33 described above.

The defects of the Henmi et al. and Yuyama et al. references are described above and are applicable to this rejection. The attempted addition of the Yamazaki et al. reference does not cure the critical defects of the Henmi et al. and Yuyama et al. references. The Yamazaki et al. reference merely provides a semiconductor display device having a display portion and a sensor portion. Title. The Office Action merely uses the Yamazaki reference to disclose a display that detects brightness and a memory array for storing a compensation factor for each of the plurality of light emitting devices. The Yamazaki et al. reference does not disclose or suggest the configuration provided in claim 35 namely that having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light

emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface. As the attempted combination of references does not disclose or suggest such a configuration, applicants respectfully submit that the rejection to claim 35 should be withdrawn.

**VII. REJECTION OF CLAIMS 36 AND 37 UNDER 35 U.S.C. § 103(A)**

Claims 36 and 37 were rejected as unpatentable over Henmi et al. in view of Yuyama et al. and Hunter et al. Applicants respectfully submit that claims 36 and 37 are patentable for the following reasons.

Claim 36 relates to an array. Claim 36 recites the features of a plurality of light emitting devices disposed over a substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface and wherein at least one light emitting device comprises a PLED. Support for the amendments to claim 36 are found, for example, in Figure 4. Claim 37 depends from claim 36 and therefore includes the features of amended claim 36.

The Henmi et al. reference allegedly relates to a device for and method of driving luminescent display panels. Title. In Figure 4, the Henmi et al. reference merely puts a “photoelectric conversion means” on a side of a transparent substrate 11 or on a same side of a substrate as a luminescent element (See Figs. 15 to 18). In this regard, the Henmi et al. reference does not disclose or even suggest the configuration provided in claim 36, namely that having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface.

The defects of the Yuyama et al. reference are described above and are applicable to this rejection. The attempted addition of the of the Hunter et al. reference does not cure the critical defects of the aforementioned references. The Hunter et al. reference relates to an active matrix electroluminescent display device. The Office Action merely uses the Hunter et

al. reference to disclose use of a PLED display suffering from ageing effects. Applicants respectfully submit that the Hunter et al. reference does not disclose or suggest the configuration provided in claims 36 and 37, namely that having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface. Applicants respectfully submit that claims 36 and 37 are patentable over the attempted combination of references as the attempted combination of references are similarly deficient with regard to the features of claims 36 and 37.

#### **VIII. REJECTION OF CLAIM 38 UNDER 35 U.S.C. § 103(A)**

Claim 38 was rejected as unpatentable over Henmi et al. in view of Yuyama et al. and Hunter et al. and in further view of Yamazaki et al. Applicants respectfully submit that claim 38 is patentable for the following reasons.

Claim 38 ultimately depends from claim 36 and therefore includes all of the features of claim 36.

The defects of the Henmi et al., Yuyama et al. and Hunter et al. references are provided above and are applicable to this rejection. The attempted addition of the Yamazaki et al. reference does not cure the critical defects of the Henmi et al., Yuyama et al. and Hunter et al. references.

The Yamazaki et al. reference merely provides a semiconductor display device having a display portion and a sensor portion. Title. The Office Action merely uses the Yamazaki reference to disclose a display that detects brightness and a memory array for storing a compensation factor for each of the plurality of light emitting devices. The Yamazaki et al. reference does not disclose or suggest the configuration provided in claim 38 namely that of having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface. As the attempted combination of references does not disclose or suggest such a configuration, applicants respectfully submit that the rejection to claim 38 should be withdrawn.



**IX. REJECTION OF CLAIMS 39, 40 AND 42 UNDER 35 U.S.C. § 103(A)**

Claims 39, 40 and 42 were rejected as unpatentable over Henmi et al. in view of Yuyama et al. and Bawendi et al. Applicants respectfully submit that claims 39, 40 and 42 are patentable for the following reasons.

Claim 39 relates to an array, comprising a plurality of light emitting devices disposed over a substrate having an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces, and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface and wherein at least one light emitting device comprises a QDLED.

The Henmi et al. reference allegedly relates to a device for and method of driving luminescent display panels. Title. In Figure 4, the Henmi et al. reference merely puts a “photoelectric conversion means” on a side of a transparent substrate 11 or on a same side of a substrate as a luminescent element (See Figs. 15 to 18). In this regard, the Henmi et al. reference does not disclose or even suggest the configuration provided in claim 39, namely that having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface.

The defects of the Yuyama et al. reference are described above and are applicable to this rejection. The attempted addition of the Bawendi et al. reference does not cure the critical defects of the references described above. The Bawendi et al. reference allegedly relates to a quantum dot white and colored light emitting diodes. Title. The Office Action merely uses the Bawendi et al. reference to disclose a QDLED display. As similar to the Henmi et al. reference, the Bawendi et al. and Yuyama et al. references fail to disclose or suggest the configuration provided in claim 39, namely that of having a substrate that has an upper surface that contacts the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface. As the attempted combination of references does not disclose or suggest the

features of claim 39, applicants respectfully request withdrawal of the rejection of claim 39. Claims 40 and 42 include features of claim 39 and are therefore similarly patentable.

**X. REJECTION OF CLAIM TO 41 UNDER 35 U.S.C. § 103(A)**

Claim 41 was rejected as unpatentable over Henmi et al. in view of Yuyama et al. and further in view of Bawendi et al. and in further view of Yamazaki et al. Applicants respectfully submit that claim 41 is patentable for the following reasons.

Claim 41 depends from claim 39 and therefore includes the features of claim 39.

The defects of the Henmi et al., Yuyama et al. and Bawendi et al. references are provided above and are applicable to this rejection. The attempted addition of the Yamazaki et al. reference does not cure the critical defects of the Henmi et al., Yuyama et al. and Bawendi et al. references. The Office Action merely uses the Yamazaki reference to disclose a display that detects brightness and a memory array for storing a compensation factor for each of the plurality of light emitting devices. The Yamazaki et al. reference does not disclose or suggest the configuration provided in claim 41 namely that of having a substrate that has an upper surface that contact the light emitting device, a lower surface distal from the light emitting device and a plurality of side surfaces and a photodetector that detects light emitted through the substrate from the light emitting device, wherein the photodetector is on the lower surface and wherein at least one light emitting device comprises a QDLED. As the attempted combination of references does not disclose or suggest such a configuration, applicants respectfully submit that the rejection to claim 41 should be withdrawn.

**XI. CONCLUSION**

Applicants respectfully submit that the claims are in condition for allowance and a notice to this effect is respectfully requested.

If any point remains that is deemed best resolved through a telephonic conversation, the Office is hereby requested to contact the undersigned directly.

Respectfully submitted,  
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